

**IN THE CLAIMS:**

**Claim 1. (Amended)** An electrophoresis channel sieving and coating composition, for use in a microfluidics device, comprising: a buffered aqueous solution of from about 0.05 to 7.5 wt% each of a sieving polymer and a channel coating polymer in a weight ratio of 1-10:1, wherein said coating polymer is less water soluble than said sieving polymer.

**Claim 2. (Amended)** The composition of claim 1, ~~for use with a microfluidics device having a PMMA or a cyclic olefin polymer substrate~~, wherein the coating polymer is a copolymer of N-substituted acrylamide.

**Claim 3. (Amended)** The composition of claim 2, wherein the coating polymer is a co-polymer of diethylacrylamide and dimethylacrylamide.

**Claim 4. (Amended)** The composition of claim 3, wherein the weight ratio of the N,N-diethyl acrylamide diethylacrylamide to N,N-dimethyl acrylamide dimethylacrylamide is in the range of about 1.5-3:1.

**Claim 5. (Canceled)**

**Claim 6. (Original)** The composition of claim 1, wherein said sieving polymer is selected from the group consisting of acrylamides and methacrylamides.

**Claim 7. (Amended)** The composition of claim 6, wherein the sieving polymer is a linear acrylamide or N,N-dimethylacrylamide homopolymer of from 500-5,000 kDal average molecular weight, and the coating polymer is a linear copolymer of two different N,N-dialkylacrylamides, wherein the alkyl groups are methyl, ethyl ethyl, or propyl groups.

**Claim 8. (Amended)** The composition of claim 1, which further includes a dsDNA ~~denaturing amount of a~~ denaturing agent.

**Claim 9. (Original)** The composition of claim 1, which includes a Tris, borate, or TAPS buffer, at a concentration in the range of about 0.025 to 0.2M.

**Claim 10. (Amended)** A microfluidics electrophoresis device comprising a polymer substrate having a separation channel formed therein, contained within said channel, a composition comprising a buffered aqueous solution of from about 0.05 to 7.5 % by weight each of a sieving polymer and a channel coating polymer in a weight ratio of 1-10:1, wherein said coating polymer is less water soluble than said sieving polymer.

**Claim 11. (Original)** The device of claim 10, wherein said substrate is formed of PMMA or a cyclic olefin polymer, and said coating polymer is a copolymer of N-substituted acrylamide.

**Claim 12. (Amended)** The device of claim 11, wherein the coating polymer is a co-polymer of diethylacrylamide and dimethylacrylamide.

**Claim 13. (Amended)** The device of claim 12, wherein the weight ratio of the N,N-diethylacrylamide diethylacrylamide to N,N-dimethylacrylamide dimethylacrylamide is in the range of about 1.5-3:1.

**Claim 14. (Amended)** The device of claim 13, wherein the substrate is formed of a cyclic olefin polymer, and the weight ratio of the N,N-diethylacrylamide diethylacrylamide to N,N-dimethylacrylamide dimethylacrylamide is in the range of about 1.5-3:1.

**Claim 15. (Amended)** A method of carrying out repeated electrophoretic separations on a polymer substrate in an electrophoretic device, comprising adding the polymer solution of ~~claim 1~~, claim 1 to a microfluidics device having a polymer substrate with a separation channel formed therein, performing an electrophoretic separation in said ~~channel~~ ~~replacing~~ channel, ~~replacing~~ the polymer composition in the channel with the same polymer composition, and repeating said performing and replacing steps.

**Claim 16. (Amended)** The method of claim ~~3~~ 15, wherein said performing step is performed at a temperature of between 50-60 degree C.